

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow. Claims 1-7 are currently amended. Support for the amended claims may be found in the specification as originally filed, *inter alia*, in paragraphs [0023]-[0027]; [0037]-[0038]. Claims 1-8 are currently pending and under consideration in the application.

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Information Disclosure Statement

Applicants respectfully note that the PTO has not considered reference A3 listed on the Information Disclosure Statement form SB/08 submitted by Applicants on November 12, 2004. The PTO crossed off reference A3 and included an annotation noting that no English abstract was provided and that the PTO could not locate an abstract on PAJ (Patent Abstracts of Japan).

Applicants wish to point out that “[w]hen a foreign reference is cited in a search report ... the requirement for a concise explanation of relevance can be satisfied by submitting an English-language version of the search report which indicates the degree of relevance found by the foreign office.” MPEP §609.04(a).

Applicants respectfully note that reference A3 was cited by the Japanese Patent Office on the International Search Report dated August 26, 2003 (a copy of the International Search Report dated August 26, 2003 was submitted with the Information Disclosure Statement on November 12, 2004).

With this response, Applicants are resubmitting a copy of the International Search Report dated August 26, 2003 along with a clean copy of the form SB/08 for the PTO to initial, sign, and date and return to Applicants with its next communication.

Rejection Under 35 U.S.C. § 103

On page 3 of the Office Action, the PTO has rejected claims 1-8 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Japanese Patent 01-156445 (hereafter “JP

'445") as evidenced by ASTM Standard E 140-07 (hereafter "ASTM 140"). On page 6 of the Office Action, the PTO has rejected claims 1-4 and 6-8 under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP '445 as evidenced by ASTM 140 and in view of U.S. Patent 5,529,642 to Sugahara *et al.* (hereafter "Sugahara"). On page 11 of the Office Action, the PTO has rejected claim 5 under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP '445 as evidenced by ASTM 140 in view of Sugahara, the Metals Handbook, and U.S. Patent 4,400,349 to Kudo *et al.* (hereafter "Kudo"). On page 12 of the Office Action, the PTO has rejected claim 8 under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP '445 as evidenced by ASTM 140 in view of Hertzberg 1995 (hereafter "Hertzberg"). On page 12 of the Office Action, the PTO has rejected claim 8 under 35 U.S.C. § 103(a) as allegedly being unpatentable over JP '445 as evidenced by ASTM 140 in view of Sugahara and further in view of Hertzberg. Applicants respectfully traverse these rejections for at least the reasons set forth below.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, prior art references must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in Applicants' disclosure. *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Here, JP '445, fails to teach or suggest a cutter comprising a "replacement ratio of Zr, Hf, V and Nb is greater than zero and less than or equal to one mass percent, the replacement ratio of Ta is greater than zero and less than or equal to two mass percent, and the total replacement ratio of Mo and W is greater than zero and less than or equal to 10 mass percent" as recited in claim 1; a cutter "wherein the total replacement ratio of a plurality of the elements represented by a formula $(Zr+Hf+V+Nb) \times 10 + Ta \times 5 + (Mo+W)$ is greater than zero and less than or equal to 10 mass percent" as recited in claim 2; a cutter "wherein the aluminum is partly replaced with greater than zero and less than or equal to 1.2 mass percent of Ti" as recited in claim 3; a cutter "wherein the nickel is partly replaced with greater than zero and less than or equal to 5 mass percent of Fe" as recited in claim 4; a cutter "greater

than zero and less than or equal to 0.1 mass percent of C, greater than zero and less than or equal to 0.05 mass percent of Mn, greater than zero and less than or equal to 0.005 mass percent of P, greater than zero and less than or equal to 0.005 mass percent of O, greater than zero and less than or equal to 0.003 mass percent of S, greater than zero and less than or equal to 0.02 mass percent of Cu, and greater than zero and less than or equal to 0.05 mass percent of Si as the impurities and the additional trace elements” as recited in claim 5; a cutter comprising a “greater than zero and less than or equal to 0.025 mass percent of Mg, greater than zero and less than or equal to 0.02 mass percent of Ca, greater than zero and less than or equal to 0.03 mass percent of B, and greater than zero and less than or equal to 0.02 mass percent of rare earth elements including Y” as recited in claim 6. Applicants note that the elements recited in claims 1-6 are required elements and are not optional.

The cutter presently claimed in claims 1-4 comprises a Cr-Al-Ni alloy “wherein the chromium is partly replaced with” various replacing elements. The cutter presently claimed in claims 5-6 comprises a Cr-Al-Ni alloy and additional required trace elements. As described in the specification, when these replacing elements and/or the additional trace elements are added to the basic Cr-Al-Ni alloy cutter, the hardness, blade durability, cutting property, corrosion resistance, and hot workability can be improved.

JP ‘445 discloses a cutting tool comprising 25-50 weight % Cr, 2.5-6 weight % Al, and the balance Ni. However, JP ‘445 fails to teach or suggest a cutter comprising presently claimed replacing elements and/or trace elements. For at least this reason, Applicants submit that the outstanding rejection based upon the combination of JP ‘445 as evidenced by ASTM 140 is improper and ought to be withdrawn.

Sugahara fails to resolve this fundamental deficiency of JP ‘445. Sugahara actually teaches away from the presently claimed invention. Sugahara notes that “if the Al ...exceed 0.8 weight % ... ductility is lowered” and teaches that the Al is presented “so as to range from ... 0.1 to 0.8 weight %.” Col. 5, ln. 65 – Col. 6, ln. 3. This greatly differs from the presently claimed invention wherein the cutter comprises “from 2.3 to 6 mass percent of Al.” As described in the specification as originally filed, “when the Al content is less than 2.3 mass percent, the hardness of the cutter is insufficiently improved.” ¶[0031].

The specific compositions of the presently claimed invention positively interact with each other and the respective elements within the cutter influence each other to create a cutter

with that has a superior workability, a low deterioration in hardness, excellent corrosion resistance, and low-temperature embrittlement resistance. For at least this reason, Applicants submit that the outstanding rejection based upon the combination of JP '445 as evidenced by ASTM 140 and Sugahara is improper and ought to be withdrawn.

The Metals Handbook fails to resolve the discrepancy of JP '445 and Sugahara. The Metals Handbook does not teach or suggest the a cutter comprising "from 2.3 to 6 mass percent of Al" or other trace elements such as "greater than zero and less than or equal to 0.005 mass percent of O" as required by claim 5. Furthermore, The Metals Handbook teaches away from the addition of oxygen by teaching that oxygen is deleterious to superalloys containing aluminum or titanium due to oxidation of these elements. pp. 1027-1028.

Kudo fails to resolve the discrepancy of JP '445 and Sugahara. Kudo does not teach or suggest the a cutter comprising "from 2.3 to 6 mass percent of Al" or other trace elements such as "greater than zero and less than or equal to 0.005 mass percent of P" as required by claim 5. Furthermore, Kudo teaches away from the addition of oxygen and that phosphorous is a deleterious impurity in Ni-Cr containing alloys. Kudo, Col. 3, Ins. 35-39. For at least these reasons, Applicants submit that the outstanding rejection based upon the combination of JP '445 as evidenced by ASTM 140, Sugahara, The Metals Handbook, and Kudo is improper and ought to be withdrawn.

Hertzberg, fails to resolve this deficiency of JP '445 and Sugahara. Hertzberg does not teach or suggest a cutter "wherein the Ni-Cr alloy has an average grain size of 1 mm or less" as required by the presently claimed invention. Hertzberg teaches an equation to determine yield strength of a polycrystalline sample utilizing grain size, but fails to teach or suggest any specific alloy having any specific grain size. For at least this reason, Applicants submit that the outstanding rejection based upon the combination of JP '445 as evidenced by ASTM 140, Sugahara, and Hertzberg is improper and ought to be withdrawn.

If an independent claim is nonobvious under § 103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicants submit that claim 8, which ultimately depends from independent claim 1, is also non-obvious at least by virtue of their dependency from claim 1.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the outstanding rejection under § 103.

CONCLUSION

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

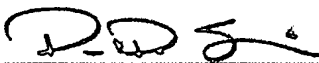
The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date October 22, 2007

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By  _____

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